REMARKS

Claims 11-30 and 34-36 are currently pending. Applicant previously elected Group I: claims 11-30 and 34-36 without traverse. Group II: claims 31-33 were previously withdrawn. Claims 11, 17, and 34 are independent claims. No new matter has been added.

Present Application

With respect to claims 11, 17 and 34, a scheduling system generates a schedule of tasks for a project, where at least one task has associated resources used to perform the task. The workflow scheduling system 100 includes a load leveler 202 which includes logic to minimize the makespan of a given schedule, subject to resource limits and task constraints. The load leveler 202 creates an initial schedule 210 by multiple calls to a makespan minimizer 208. Inputs used to create the initial schedule 210 include a set of tasks 206, resource limits 204, and a set of constraints 212. The workflow scheduling system 100 also includes a cost estimator subsystem to evaluate the proposed schedule to estimate the cost associated with the schedule. The workflow scheduling system 100 also includes a cost minimizer to modify the proposed schedule in response to the resource fluctuations and its associated cost.

The load leveler 202 obtains initial resource levels from either the absolute resource constraints or a preliminary schedule. The load leveler 202 calls the makespan mimimizer 208 to create an initial workflow schedule 210. The initial resource levels function as an upper bound for resource usage, and the load leveler 202 searches for lower bounds by lowering each resource individually, leaving the other resources at their upper bounds. The load leveler 202 sets all resources to their lower bounds and increases all the resources by a constant amount until the makespan minimizer can find a solution. The load leveler picks a resource and attempts to lower it by a constant amount, and if there is a solution the resource is left at the lower level. If not, it is set back to its previous level. The process is repeated with different resources until no improvement is possible. The load leveler is configured to output data representative of the modified proposed schedule of tasks for the project.

The cost minimizer 104 generates an initial solution, and incrementally improves the solution using different possible solutions for optimal hire/fire decisions. The optimal hire/fire

decisions are focused to minimize total cost including base cost, hiring cost, firing cost, overtime, and undertime. The cost minimizer 104 can be used as an alternative to the load leveler 202 for creating an initial schedule. The cost minimizer 104 includes an initial seed generator 402 which creates an initial schedule that is subsequently improved. The seed generator selects a task 300 from the task set 206, and creates a task window for each selected task. For each task, the seed generator 402 sends the task to the manpower planner 106. The process is continued for each task until it is assigned a valid start time and a full initial schedule has been generated. The incremental improvement engine 502 modifies the full initial schedule by passing each task to the manpower planner 106, which selects a start time for the task and determines the cost of the schedule at that start time.

The manpower planner 106 uses the full schedule to determine which task start times minimize the overall cost of the schedule. The manpower planner 106 can compute an optimal cost from the beginning of the schedule to a given time point as a function of the resource level at that time point. The computation can be evaluated for each possible manpower level. The incremental improvement engine 502 makes several passes over the set of tasks, and continues to evaluate the set of tasks until no additional significant cost savings can be found.

Regarding Section 102 Rejections

Claims 11-30 and 34-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Podrazhansky (US Patent Publication No. 2002/0052770, hereinafter "Pod"). Applicant respectfully traverses the rejection.

Pod does not teach, suggest, or otherwise make obvious a method, system, or apparatus for generating schedules of tasks that includes a load leveler subsystem to receive data representative of the tasks for the project and to generate a proposed schedule of tasks based on fluctuations of resources as claimed by Applicants. Rather, Pod receives activities or work effort *already* performed on the selected organization's behalf and generates a prediction of future workload volumes. Pod generates the prediction of future workload volumes based on either historical data represented as a historical workload volume or special events represented as a special events data volume. The forecast module processes a selected workload volume into a forecast, which predicts future workload requirements based on *historical* transactions or events.

The staffing requirements module converts workload volumes into the time it takes to complete the task dictated by the workload volume. (See Pod FIG. 1, 2, 3; ¶¶ 31, 35, 36, 41, and 45).

Further, Pod does not teach, suggest, or otherwise make obvious a method, system, or apparatus for generating schedules of tasks that includes a cost minimizer to adjust the proposed schedule based on resource fluctuations as claimed by Applicants. Rather, Pod has a schedule costing module that performs the same functionality as the staffing requirements costing module: estimating the cost of a workload volume based on historical information, known labor costs and known labor force availability. The staffing requirements module converts workload volumes into the time it takes to complete the task dictated by the workload volume. The cost calculation option enables a user to formulate the cost of overtime by selecting overtime thresholds (e.g. shifts beyond normal working hours, holiday events, and shift multipliers to increase shift costs by a specified number). The overtime thresholds, with a known employee or class of labor force costs, provide the user with an estimated payroll. The view schedule cost tool facilitates viewing the cost of the schedule by the user. (See Pod FIG. 1, 2, 3; ¶¶ 35, 45, 51 - 54).

Pod does not, alone or in combination, teach, suggest, or otherwise make obvious "a load leveler subsystem configured to receive data representative of the tasks for the project and to generate a proposed schedule of the tasks responsive to fluctuations of resources utilized to perform the tasks" and a "cost minimizer communicatively coupled to the cost estimator for modifying the proposed schedule responsive to the resource fluctuations and its associated cost" as claimed in claim 11 because Pod's schedule costing module, which is directly applicable to the staffing requirements module, only estimates the cost of a workload volume based on *known* labor cost and labor force availability. Thus, by Pod's design, the system does not include a cost minimizer to transform one schedule into a different, more cost-effective schedule responsive to resource fluctuations and its associated cost. Further, Pod's forecast module generates a *prediction* of future workload volumes based on *historical* transactions or events. This is not the same as generating a proposed schedule of the tasks responsive to fluctuations of resources utilized to perform the tasks, which creates an initial workflow schedule and then iteratively lowers the bounds of each resource to find the best possible schedule. Additionally, Pod's staffing requirements module *converts* workload volumes into the time it takes to complete the task dictated by the workload volume based on *known* labor costs and labor force availability,

and the schedule costing module only enables the user to formulate the cost of overtime by specifying an overtime threshold. However, this is unlike Applicant's invention that *computes an optimal cost* in relation to varying a manpower level (i.e. resource fluctuations), where the manpower level includes considerations for base cost, hiring cost, firing cost, overtime, and undertime. Claim 17, a computer-implemented method claim, includes similar limitations and is allowable for the same reasons. Therefore, Applicant respectfully requests the withdrawal of the rejections of claims 11 and 17 under 35 U.S.C. §102(e).

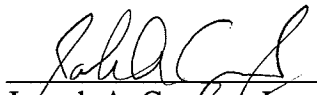
With respect to claim 34, Pod does not, alone or in combination, teach, suggest, or otherwise make obvious "a cost minimizer communicatively coupled to the cost estimator and configured to modify the proposed schedule responsive to the resources utilized to perform the tasks and the estimated cost of the project" for the same reasons set forth above regarding the cost estimator recited in claim 11. Therefore, Applicant respectfully requests the withdrawal of the rejection of claim 34 under 35 U.S.C. §102(e).

Claims 12-16 are dependent on allowable base claim 1, and are allowable for the same reasons. Claims 18-30 are dependent on allowable base claim 17, and are allowable for the same reasons. Claims 35-36 are dependent on allowable base claim 34 and are allowable for the same reasons.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,



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